July 2017

NSSC This Month

U.S. Army Garrison Natic Affairs Office

'LEAP' Ahead

NSRDEC puts Soldiers through paces

NAGC

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First Place, External Newsletter

Commander's Corner

Brig. Gen. Anthony W. Potts
NSSC Senior Commander

Sizzling Start ...

The summer is off to a sizzling start – and I'm not speaking only of grills, temperatures and fireworks. Our mission has taken no summer vacation, and our battle rhythm remains as intense as July heat.

The month began with a memorable Independence Day weekend punctuated by stirring patriotic events across this historic region. Team Natick participated enthusiastically in the festivities and provided the honor guard for the Natick parade. Neighbors across the community joined senior Air Force leaders and me for an old-fashioned barbecue in our adopted hometown. We relished the opportunity to celebrate American independence with hot dogs, cool drinks and good company.

We welcomed a new garrison commander during a memorable change of command ceremony held just after the holiday weekend. We bade farewell to a superb commander and New England original who made an enormous and positive impact on the Natick Soldier Systems Center. As fate would have it, we're equally fortunate in his successor. Lt. Col. Bryan Martin, a distinguished, combat-tested leader with deep roots in the light infantry and Special Forces communities, as well as the region, joins us after a challenging and highly successful tenure on the Joint Staff. I was gratified by the enthusiastic participation of the Natick community and Installation Management Command-Sustainment senior leaders as well as family members and distinguished guests. Our Soldiers and civilians performed magnificently, as usual, conducting a lively and dignified ceremony worthy of the occasion and company. Well done, Team Natick.

I logged quite a few travel miles, which won't come as earth-shattering news to those following our mission. While I miss the home base, the travel affords me a bird's-eye view of some of the most vital and fascinating innovations in Army "R&D." Just this month, I observed some fascinating work at the U.S. Army Communications-Electronics Research, Development and Engineering Center, the Army Research Laboratory, and the U.S. Army Tank and Automotive Research, Development and Engineering Center. These RDECOM organizations share best practices that I, in turn, share with NSSC teammates in order to build synergy throughout our command.

I hope everyone had a great time during Organization Day, the occasion not only of (mostly) friendly rivalry, spirited competition and great food, but perhaps our best annual opportunity for esprit-building, camaraderie and family fun. I appreciate all the diligence and creativity of our Civilian Welfare Fund volunteers, who make this a terrific signature event every year.

Keep up the great work you do on behalf of the American Soldier.

Team Natick!

Brig. Gen. Anthony W. Potts
NSSC Senior Commander

NSSC This Month

NSSC
Senior Commander
Brig. Gen. Anthony W. Potts

Garrison Commander
Lt. Col. Bryan Martin

Command Sergeant Major
Command Sgt. Maj. Michael R. Pintagro

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About this newsletter
NSSC This Month is a monthly newsletter covering NSSC news within the Army and commercial media.

NSSC This Month is maintained by the USAG Natick Public Affairs Office.

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On the Web: www.army.mil/natick

Cover photo: Jeff Sisto, NSRDEC Public Affairs

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SHARP Program

Did you know that restricted and unrestricted sexual assault reporting is available for all Military AND DoD Civilians? A restricted report means you can get medical assistance, counseling, legal advice, and advocacy services without initiating an investigation with law enforcement. But you can only make a restricted report to the Sexual Assault Response Coordinator, a Victim Advocate, or healthcare personnel. An unrestricted report has the same benefits as a restricted report, but also initiates an investigation with law enforcement. Want more information about the process or services available to you? Contact the SARC, Susan Baldwin, at ext. 6925 or susan.o.baldwin.civ@mail.mil.

Army Blended Retirement System Calculators

Will you elect the new Blended Retirement System or the old legacy system? Go to https:/jkodirect.jten.mil to access the BRS calculators and to take the Opt-in Course, which is required by all service members, by Dec. 31, 2017, to help make your decision. Do you need more help? Visit http://militarypay.defense.gov/BlendedRetirement.

Hanscom Transition and Employment Calendar

Hanscom AFB has released their Transition and Employment calendar for the remainder of the year. Individuals can register for classes by e-mailing Dan Mazzucca, daniel.mazzuca@us.af.mil, or by calling 781-225-2765, Monday through Friday from 8:30 a.m. to 3:30 p.m. Registration is required for all classes. Some of the workshops scheduled to be held are, "Franchising lunch and learn," "Effective job search strategies," "LINKEDIN: The New Path to Employment," "Winning salary negotiation," "Federal resume writing and USAJOBS," and much more.

Free Fun Fridays

The ACS Information and Referral Program has information on a number of Massachusetts attractions that offer free admission on select Fridays throughout the summer. More than 85 Museums and cultural events are included. For more information, call 617-969-8900, or e-mail diane.k.magrane.civ@mail.mil for a copy of the list.

Garrison Spotlight

Jason Gove

Photo: Tiazonjia Mouton, USAG Natick Public Affairs

What Jason does:

"I provide coordination throughout the installation regarding short-, mid-, and long-range master planning and real property activities, continuously evaluating operations to ensure the installation adapts to the changing environments."

DPW Director Russ Stokes on Jason:

"Jason is the chief of master planning for the installation. While only in the position for a little over a year, Jason has mastered the complexities of the position in a short time. Jason collaborates with installation stakeholders to establish short- and long-term requirements. These requirements are then used to construct the Master Plan, a flexible road map for the future. Jason works with our higher headquarters to ensure all real property databases and justifications support installation requirements. He is also a professional architect, and has, on many occasions, stepped up to the plate to assist our design team in developing and completing projects, most notably, the renovation of Hunter Auditorium and recent stairwell and hallway renovations. Jason is dedicated and can be counted on to do professional work on time. He is truly one of those making a difference for the installation."

Power of Restful Sleep Seminar

Learn the vital role of restful sleep in your good health at a free seminar on Tuesday, August 22, from 12 pm to 1 pm at the Hunter Auditorium. Whether you feel tired when awake, have occasional insomnia, or just have not slept well in years, this workshop provides helpful strategies to use right away. Topics include: Consequences of poor sleep, insomnia, developing a sleep schedule, what to do when you just can't fall asleep, resetting your internal clock, and keeping a journal. Presented by ACS Family Advocacy Program and the Blue Cross/Blue Shield Federal Employee Program. To register, go to https://www.eventbrite.com/o/army-community-service-natick-soldier-systems-center-14377248149.

Swearing In

Pathways intern commissioned as medical officer

By John Harlow, USAG Natick Public Affairs/NATICK, Mass. (July 19, 2017)

Photo: John Harlow, USAG Natick Public Affairs

Lt. Col. Ryan Raymond, former USAG Natick garrison commander, administers the oath of commissioned officers to Courtney Cowell on May 31.

The oath one takes to become an officer in the United States Army is 94 words. After repeating those 94 words, Courtney Cowell transformed from an intern to an officer in the Army.

"I have been working at becoming an officer for a few years now," said Cowell. "It meant a lot to have Lt. Col. (Ryan) Raymond administer the oath."

Many have said with the United States being at war for the past 16 years that it takes a special person to raise his or her right hand and swear to protect and defend the Constitution of the United States against all enemies foreign and domestic.

"I started here (at Natick) when I was doing my co-op program and after meeting everyone here, veterans, active-duty Soldiers, and I think the ones who (impressed me) the most (were) the Human Research Volunteers," said Cowell. "You saw how selflessly they came here to do research with us to help better the rest of the Soldiers. I was inspired by them."

A graduate of Northeastern University, Cowell originally wanted to enroll in the ROTC program – something that her family didn't fully support.

"My Dad said no to me joining ROTC when I went to Northeastern," said Cowell. "As a police officer in New York, he had a better idea of life than I did at 18. He said if he is paying for college, I am not doing ROTC. Now after working at Natick and deciding to go forward with a career in the Army, he is the most supportive person."

During Cowell's time at Natick, she worked at the U.S. Army Research Institute of Environmental Medicine and the Natick Soldier, Research, Development and Engineering Center.

"I started with two co-ops that were six to eight months each and then signed on with the Pathways Program," said Cowell. "I did three eight-month rotations. My first rotation was with the biological sciences and technology team, where I did a lot of microbiology research to develop a UTI preventative wipe for female Soldiers. I then went to USARIEM to work on human research. I was part of the study on microclimate heating. We studied the effects of heating on the forearms and the face to improve dexterity in the hands and also participated in the Pikes Peak study from Natick.

"I finished up my last rotation with the Combat Feeding Directorate. We worked on food safety and packaging."

Cowell's boyfriend is a veteran, and seeing the many medical issues that veterans face made her want to be part of the solution. She starts medical school Aug. 1 at the Walter Reed Medical Center.

"In five years, I hope to see myself in a residency program, and I would love to be at Walter Reed," said Cowell. "I am really interested in family medicine because that is where the greatest need for physicians is. Having been here at Natick and meeting many Soldiers and veterans, psychiatry interests me, as well."

Cowell said she was inspired during her time at the Natick Soldier Systems Center.

"I have had many people help me learn what the military is like and mentors who are scientists but also Soldiers like Marissa Spitz, who has been a huge mentor to me joining the military," said Cowell. "Being here has really shown me how everyone – especially our veterans – deserves the best health care. I want to be a part of the team that helps them going forward."

Photo: David Kamm, NSRDEC Strategic Communications

Opposite: Davis Tindoll, left, director of IMCOM Sustainment Directorate, passes the colors to Lt. Col. Bryan Martin, new U.S. Army Garrison Natick garrison commander.

Changing Hands

Lt. Col. Martin takes command of USAG Natick

By Bob Reinert, USAG Natick Public Affairs/NATICK, Mass. (July 6, 2017)

The U.S. Army Garrison Natick welcomed a new garrison commander during a change of command ceremony July 6 in Hunter Auditorium on the installation.

Lt. Col. Bryan Martin received the garrison colors from Davis Tindoll Jr., director of the Installation Management Command's Sustainment Directorate. Martin takes over from Lt. Col. Ryan Raymond.

"The Army doesn't train its officers to be garrison commanders," said Tindoll, "but it does develop leaders – leaders who are capable, innovative and motivated to handle the challenges of this type of command."

Martin comes to Natick after three years as an operations officer on the Joint Staff's Deputy Directorate for Special Operations and Counterterrorism.

"Bryan, as an accomplished athlete and Ranger, you surely remember hurting in places you never thought existed," said Brig. Gen. Anthony Potts, Natick's senior commander. "Well, I think you'll find yourself challenged in ways you never thought you could be challenged, as a garrison commander."

Tindoll expressed confidence in Martin's abilities.

"Bryan, I'm certain that with your demonstrated leadership, you'll build on the successes of your predecessors," Tindoll said. "The challenges are many, but I'm confident you'll bring great energy and excellence to the garrison and this installation."

Martin, whose family has Massachusetts roots, sounded as if he were ready for that challenge.

"Brigadier General Potts and the commanders of the Natick mission units, I look forward to working with you in support of your mission," Martin said. "Fifteen of my last 18 years in service, I've been a direct recipient of the products researched here in these buildings, and I'm absolutely thrilled at the opportunity to give back."

A Maine native, Raymond moves on to the National War College at Fort McNair, Virginia, but he has left a lasting imprint on Natick.

"Ryan and his staff have worked tirelessly to fulfill our vision of NSSC, which is 'One Team Committed to Soldier Success,'" Potts said. "He and his garrison team worked relentlessly to improve communications across the installation and cultivate partnerships – often on infertile ground. Under Ryan's leadership, we'll just say, lions occasionally laid down with lambs. So, thank you, Ryan, for making that happen."

Tindoll pointed out that Raymond envisioned improvements at Natick and didn't let obstacles stop him from making them reality.

"He has postured the garrison for success, molding the organization to grow in efficiency, responsiveness and flexibility," Tindoll said. "He instilled commitment in his workforce, ignited the team's energy and challenged them to perform to a higher standard."

Raymond confessed that he had come to Natick two years ago largely unprepared to lead a garrison.

"I truly enjoyed the challenges of learning this job, but not nearly as much as the garrison staff enjoyed teaching me," Raymond said, jokingly. "I've never been witness to a more committed and cohesive community in my life.

"The way this team comes together to support our nation from the confines of this mini installation in this small town is truly remarkable."

Making Contributions

By Bob Reinert, USAG Natick Public Affairs/NATICK, Mass. (July 7, 2017)

For many years of his Army career, he used equipment developed here. Now, Lt. Col. Bryan Martin gets the opportunity to make his own contributions to the Natick Soldier Systems Center.

Martin took over July 6 as U.S. Army Garrison Natick commander. He will lead an organization that supports all of the tenant units that make important advances with equipment used by Soldiers.

"We're extremely excited to be here," Martin said before Natick's change of command ceremony. "I've been a direct consumer of the products researched in these labs for the last 18 years of my career. And I'm happy to give back in service and do the best I can for this facility and this command."

Martin mentioned improvements made over the years to body armor and other equipment that has lightened the Soldier's load.

"I've been dismounted my entire career, so every ounce saved helps," Martin said. "And I will tell you the MREs have come a very, very long way in the 20-something years that I've been eating them."

First on Martin's agenda will be developing a feel for the operational environment at Natick.

"Colonel (Ryan) Raymond's given me a fantastic hand-over," said Martin, "but I'm looking forward to getting out and kind of meeting all the mission partners and seeing the facilities for myself and figuring out how I can best plug in and assist the commander with his mission

"I'll continue … the track record here of being the only active-duty Army installation in New England and providing interface between the active-duty community and the New England population however we can."

Martin added that he will do the best possible job with the resources provided to support Natick's mission.

"Because at the end of the day, we still have Soldiers going downrange in harm's way," Martin said. "And whatever I can do to help them out, help the mission partners here out, make their lives a little bit easier, a little bit more efficient, that's what we aim to do."

The U.S. Military Academy graduate comes to Natick from the Pentagon, where he served as an operations officer on the Joint Staff's Deputy Directorate for Special Operations and Counterterrorism.

"I'm coming off of three years in the basement of the Pentagon, working on the Joint Staff, so I'm extremely happy to have an office with a window and see daylight," Martin said. "We've got family in the area, so we're very, very happy to be here."

Getting Awarded

Natick employees recognized for excellence in government

By Jane Benson, NSRDEC Public Affairs/NATICK, Mass. (June 27, 2017)

Six employees from the Natick Soldier Research, Development and Engineering Center received 2017 Greater Boston Federal Executive Board Excellence in Government Awards during a ceremony at NSRDEC on June 23.

President John F. Kennedy established the Federal Executive Boards in 1961. The Greater Boston Federal Executive Board, or GBFEB, represents about 150 federal agencies in the New England area.

Kim Ainsworth-Klaskin, executive director for GBFEB, urged federal employees in general, and Natick employees specifically, to tell people about the great work they do. NSRDEC is a leader in science and technology, or S&T, development for the warfighter.

"This organization is unbelievable …" said Ainsworth-Klaskin. "I really appreciate everything you do every day."

During the ceremony, Harold "Doc" Holliday received the Unsung Hero Award. The award honors an employee who often works behind the scenes to enhance the workplace. Holliday is a supply technician for multiple teams in NSRDEC's Warfighter Directorate. He was commended for working tirelessly to ensure customer satisfaction and operational efficiency.

"Natick Soldier Research, Development and Engineering Center is on the leading edge of Soldier protection for our country," said Holliday. "For me, customer service is my watchword in accomplishing my part of this contribution to our Soldiers. Whether it is to our Soldiers, my teams or our customers, I do not ever hesitate to do my part to make us shine – that is my responsibility, my obligation and my commitment."

Beverly Lange, a workforce management support specialist, G1 – Human Resources, was presented the Career Achievement Award. The award acknowledges an employee who has been in government service for 20 years or more who embodies the highest ideals of public service every day. Lange was recognized for her accuracy, dependability, commitment and integrity.

"I was truly honored to receive the GBFEB Career Achievement Award," said Lange. "I have been very lucky to have worked for such a great organization for so many years. The work that is done at Natick every day to support our warfighters is truly amazing. What a blessing it is to know and work with so many wonderful, and wonderfully talented, people."

George Moorachian Jr., a senior aerospace engineer in NSRDEC's Aerial Delivery Directorate, was presented the Management Excellence Award. The award acknowledges an employee whose contributions exemplify efficient, effective and results-oriented government. Moorachian was responsible for an important effort for the Special Operations Command, which involved the airdrop certification of the DoD Service Common, Inflatable 4.7 Meter Combat Rubber Raiding Craft. Under his leadership and technical expertise, work that would normally take one year was completed in 60 days.

"I'm honored to have been chosen for a GBFEB award, and it's nice to be recognized for the work I do," said Moorachian. "However, my motivation is to do right by our Soldiers, Sailors, Marines and Airmen, by giving them the aerial delivery capabilities needed to do their jobs. And in the process, I'm fortunate to work side-by-side with them."

Ekaterina "Katya" Makarova, a general engineer in NSRDEC's Aerial Delivery Directorate, was presented with the Fresh New Hire Award. Makarova had an immediate positive impact on the team, providing much-needed program management and contract support. Within two months of being hired, Makarova became a certified contracting officer representative, enabling her to begin initiating new contracts for the following fiscal year.

"I am deeply honored to be considered for this award and hope to continue to be able to serve the nation's Soldiers to the best of my ability," said Makarova.

Jennifer Koven, a textile technologist in NSRDEC's Aerial Delivery Directorate, received the Strategic Partnership Award. The award honors an employee who develops and sustains effective coordination, collaboration and community with internal and external partners. Koven, a subject matter expert for the T-11 parachute deployment sleeve, became aware that some of the sleeves had been provided to the field without being inspected by the government. She addressed the nonconforming equipment in a technical manner that helped ensure Soldier safety while preventing some units from having their airborne operations grounded.

David Colanto received the Leadership Excellence Award. The award recognizes an employee who develops innovative ideas, promotes creativity, empowers employees, and inspires trust. Colanto is a mechanical engineer in NSRDEC's Warfighter Directorate, serving as the Thrust Area Manager for the ballistics and blast S&T portfolio. During 2016, Colanto took on the additional responsibility of leading a cross-organizational Integrated Product Team. Under Colanto's leadership, the effort culminated in the development of realistic and effective research goals and allowed for a comprehensive and executable deliverable.

Douglas Tamilio, director of NSRDEC, congratulated the winners and said that their "hard work, dedication and commitment to our nation are truly appreciated."

Photos: Jeff Sisto, NSRDEC Public Affairs

Left and bottom: Staff Sergeants Anthony Sandoval and Robert Keifer, noncommissioned officers for the Headquarters Research and Development Detachment at the Natick Soldier Research, Development and Engineering Center, take the oath of re-enlistment July 7, on the North Bridge in Minute Man National Historical Park, where the American Revolutionary War Battles of Lexington and Concord were fought.

Raising Their Hands

Soldiers re-enlist at Revolutionary War landmark

By Jeff Sisto, NSRDEC Public Affairs/NATICK, Mass. (July 17, 2017)

When U.S. Army Staff Sergeants Robert Keifer and Anthony Sandoval decided to re-enlist, they wanted to swear in at a location with historical significance to their current duty station, service branch and country.

As noncommissioned officers stationed at the only active duty Army base in New England – the Natick Soldier System Center in Natick, Massachusetts – the natural choice was Minute Man National Historical Park, where the battles of Lexington and Concord were fought to begin the American Revolutionary War.

And so, standing on the battle's famous North Bridge crossing the Concord River, where the "shot heard round the world" was fired, Keifer and Sandoval recited the oath of enlistment in front of a small crowd of fellow Soldiers, co-workers, family members and tourists, as another Soldier waved a 13-starred, colonial era, "Betsy Ross" flag behind them.

As NCOs for the U.S. Army's Natick Soldier Research, Development and Engineering Center, or NSRDEC's Headquarters Research and Development Detachment, Keifer and Sandoval provide daily supervision to new Soldiers serving in the Human Research Volunteer Program.

The assignment allows them to take in the rich history of the region.

"The reason we chose this location is the historical significance and because Sandoval and I both like Revolutionary War history," said Keifer. "To reenlist where 'the shot heard round the world' was fired has meaning, and obviously, it's a very scenic spot."

"This is where our country, where the fight for independence, really began," Keifer said.

‘LEAP’ Ahead

NSRDEC puts Soldiers through paces

By Jane Benson, NSRDEC Public Affairs/NATICK, Mass. (July 5, 2017)

When it comes to gaining insight into the effects of bulk from clothing and equipment on Soldier performance, researchers at the Natick Soldier Research, Development and Engineering Center are LEAPing at the chance.

Originally developed by the Marines and then adapted to meet the needs of the Army, the Load Effects Assessment Program-Army, or LEAP-A, tool consists of a series of obstacles and mission-relevant activities to resemble challenges that warfighters face in combat situations. LEAP-A provides a reliable method to measure the impact of clothing and individual equipment, or CIE, on Soldier performance.

Blake Mitchell, an NSRDEC engineering psychologist and team leader for the Human Factors Team, explained that the LEAP-A course is designed to assess equipment configurations impact on human performance, with the assumption that each of those configurations is influenced by weight, bulk, stiffness or flexibility.

“We conducted an earlier test systematically varying the weight, while attempting to keep bulk and stiffness constant,” said Mitchell. “This time we are systematically varying the bulk while attempting to keep the weight and stiffness constant. This will help us to better understand what the role of bulk is in performance outcomes when completing the LEAP-A.”

Mitchell explained that the Soldiers complete a warmup and perform two load transfer tasks – one horizontal between two equal height towers and one vertical from a low to a high tower. They also perform a vertical jump task, a marksmanship task and run the obstacle course, which requires them to maneuver through stairs, a hatch, and a tunnel – followed by sprinting and then climbing stairs or a ladder. All of this is followed by an agility run with hurdles.

Soldiers also carry out a casualty drag, 180-pound mannequin; climb through a large and a small window; perform a bounding rush, sprint, drop into prone position, aim weapon and stand up; navigate the balance beam; crawl low, supine and high; climb over a courtyard and inner yard wall; repeat the marksmanship task; repeat the load transfer tasks; and repeat the vertical jump task.

“They give us subjective ratings on thermal sensation and comfort and perceived exertion pre- and post-obstacle course,” said Mitchell. “They also rated the impact of bulk on the ability to perform the tasks.”

The project is led, executed and funded by NSRDEC, and it is a collaboration between the Human Factors and the Biomechanics Teams within the Human Sciences Branch, Warfighter Directorate.

By understanding how bulks affects the Warfighter’s ability to move and maneuver through the LEAP-A obstacle course, scientists and engineers will be able to implement modifications to optimize the design and integration of clothing and equipment – thus, improving Soldier-System interface and performance.

“The goal is to better understand what the results from LEAP-A product tests mean, in this case focusing on the bulk of the product,” said Mitchell. “For example, if a Soldier completes a course in 5 percent more time in body armor X than they did when in a baseline [or] duty uniform configuration, how much of that change in performance is due to the bulk that the body armor added?”

Mitchell said that the information learned from the effort will eventually transition to Product Director Soldier Systems Integration and test agencies, including the Aberdeen Test Center and Maneuver Battle Lab. The findings will also benefit the international defense research community through The Technical Cooperation Program – which includes the United States, Canada, United Kingdom, New Zealand and Australia.

> “If a Soldier completes a course in 5 percent more time in body armor X than they did when in a baseline [or] duty uniform configuration, how much of that change in performance is due to the bulk that the body armor added?”
>
> Blake Mitchell, NSRDEC Human Factors Team

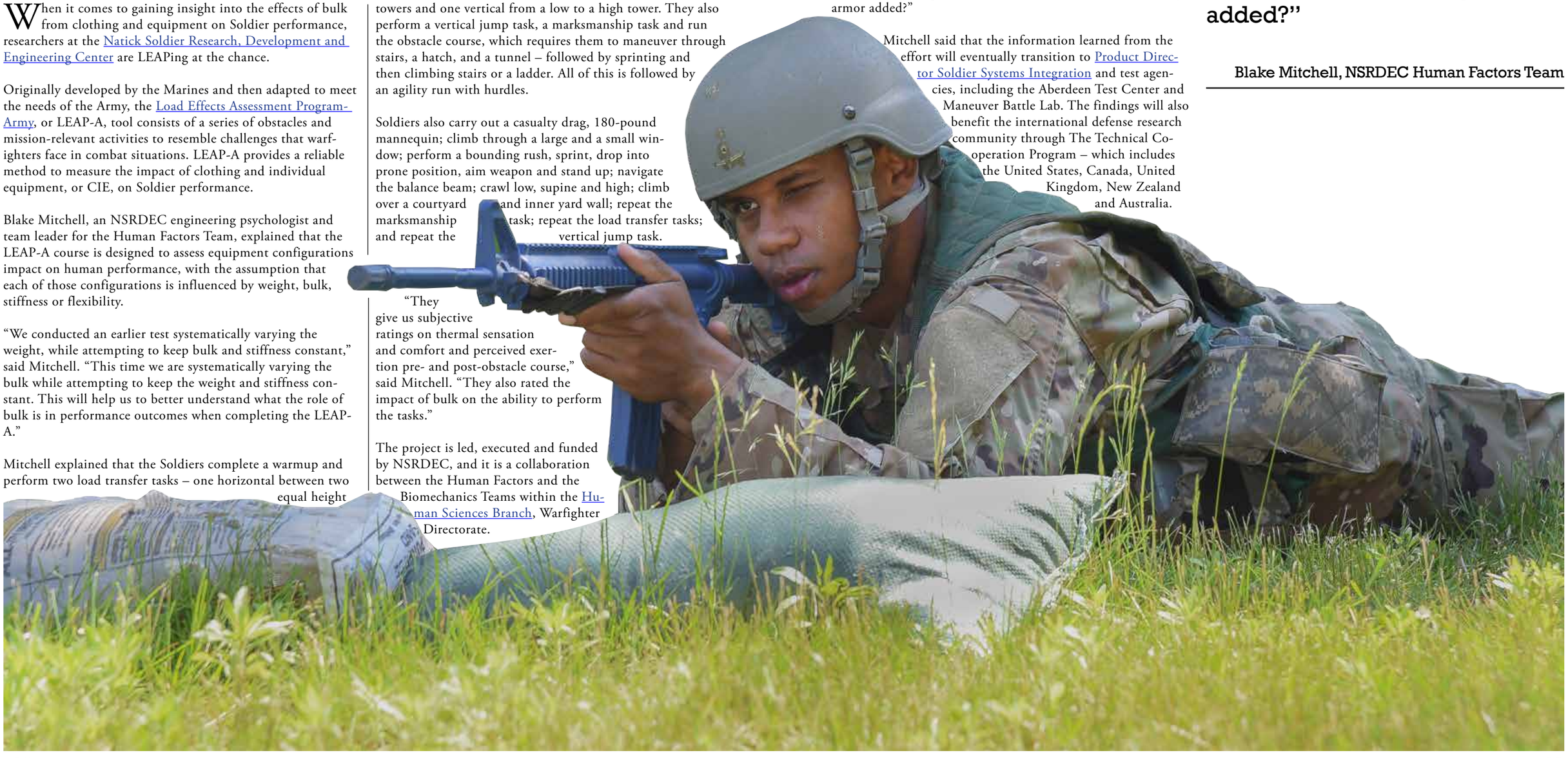


Photo: Jeff Sisto, NSRDEC Public Affairs Office

Photo: Pfc. Zachery Perkins, 7th Army Training Command

HARP on It

Maximizing the 'golden hour'

By USAG Natick Public Affairs/NATICK, Mass. (July 25, 2017)

It's known as the "golden hour," and it refers to the precious 60 minutes following a battlefield wound when proper medical treatment can be crucial to a Soldier's survival.

To help make the most of that time, Ben Williams of the Department of Defense Combat Feeding Directorate, or CFD, at the Natick Soldier Research, Development and Engineering Center, has developed the Golden Hour Ambulatory Rescue Pack, or "Golden HARP," which is designed to keep medical supplies cool in hot climates. The Golden HARP was funded through the NSRDEC's Bootstrap Initiative and is an upgrade kit for the previously developed HARP, which was designed specifically to cool intravenous, or IV, bags and bottles of water on the move.

In places such as Iraq, average ambient temperatures can range from 95 to 120 degrees Fahrenheit, making it logistically difficult to provide warfighters in austere conditions proper on-site medical treatment. Blood must be kept at temperatures from 39 degrees F to 46 degrees F, while IV bags may be stored at higher temperatures but must be cooled to between 77 degrees F and 98.6 degrees F before use.

"If you come under attack at a Combat Outpost, or while on the move, aren't going to get resupplied anytime soon, and medical evacuation is not an option … it would be great to have the Golden HARP available … just in case somebody gets hit," Williams said. "Now you have blood on-site, ready to go.

"If you have limited or no power, this may be your only solution for prolonged cold storage at that important time."

According to Williams, the Golden HARP was designed to try and meet requirements recently generated by the U.S. Army Medical Materiel Agency, or USAMMA, which is looking to improve upon current mobile blood storage capabilities.

After two years' work and testing, Williams produced the Golden HARP, a ruggedized, man-transportable platform that allows medical personnel to safely store, carry and monitor/actively control the temperature of its contents. The unit can be used in the field in rotary-wing aircraft, vehicles or unmounted and can accommodate up to two liters of medical supplies, which are actively cooled, along with room for ancillary items. The system can also be attached to any MOLLE frame pack for easy transport in austere environments.

The system's BB2590 battery can be charged by its onboard, flexible solar panel. Eight hours of sunlight daily allows the Golden HARP to maintain temperature indefinitely without recharging or battery replacement, provided the ambient temperature is below 90 degrees F and ample sunlight is available. Using a single battery, the system is also capable of maintaining temperature with a full solar load (1,000 W/m²) at an ambient temperature of 95 degrees F for a minimum of 111 hours, 115 degrees F for a minimum of 60 hours, and 135 degrees F to 155 degrees F for a minimum of 30 hours. Replacing the battery would result in a doubling of the storage times.

"Solar power charging isn't new, but having it in something where it's actually this effective is pretty unique," Williams said. "The goal for me was to make the system run indefinitely, on the move, with high reliability and have it fully automated so there's minimal chance of user error, which could result in improperly stored medical supplies."

The Golden HARP is also completely modular, meaning that any component of the system can be removed and replaced without tools or any expertise. The Golden HARP's Vacuum Insulated Cold Chamber, or VICC, can also be removed from the system and transported as a stand-alone, insulated container with no active cooling.

Other system features include active temperature monitoring and control; integrated diagnostics and user feedback capabilities; an external, back-lit display that shows the internal temperature and system status, which flashes if the VICC goes out of temperature; state of the art insulation; a specialized coating on the exterior of the bag to help reflect infrared radiation; and a battery charger that displays time until charged, time until discharged, charge status, and any electronic faults.

"We're getting significant increases in performance over what's currently (out) there," said Williams, "especially when you factor in the maturity of the system's components, size, weight, durability and power requirements or lack thereof. This thing is next level, combining technologies that are just emerging."

In mid-July, Williams sent the Golden HARP to USAMMA for a user evaluation and feedback.

"This is no benchtop prototype," Williams said. "Hopefully, we can get some out into the warfighter's hands. Hopefully, it will be there during the Golden Hour, and hopefully, it will do some good."

> "If you come under attack at a Combat Outpost, or while on the move, aren't going to get resupplied anytime soon, and medical evacuation is not an option … it would be great to have the Golden HARP available … just in case somebody gets hit."
>
> Ben Williams, Combat Feeding Directorate

Photo: David Kamm, NSRDEC Strategic Communications

Bunker Mentality

Modular system quick answer for Soldier protection

By Jane Benson, NSRDEC Public Affairs/NATICK, Mass. (July 25, 2017)

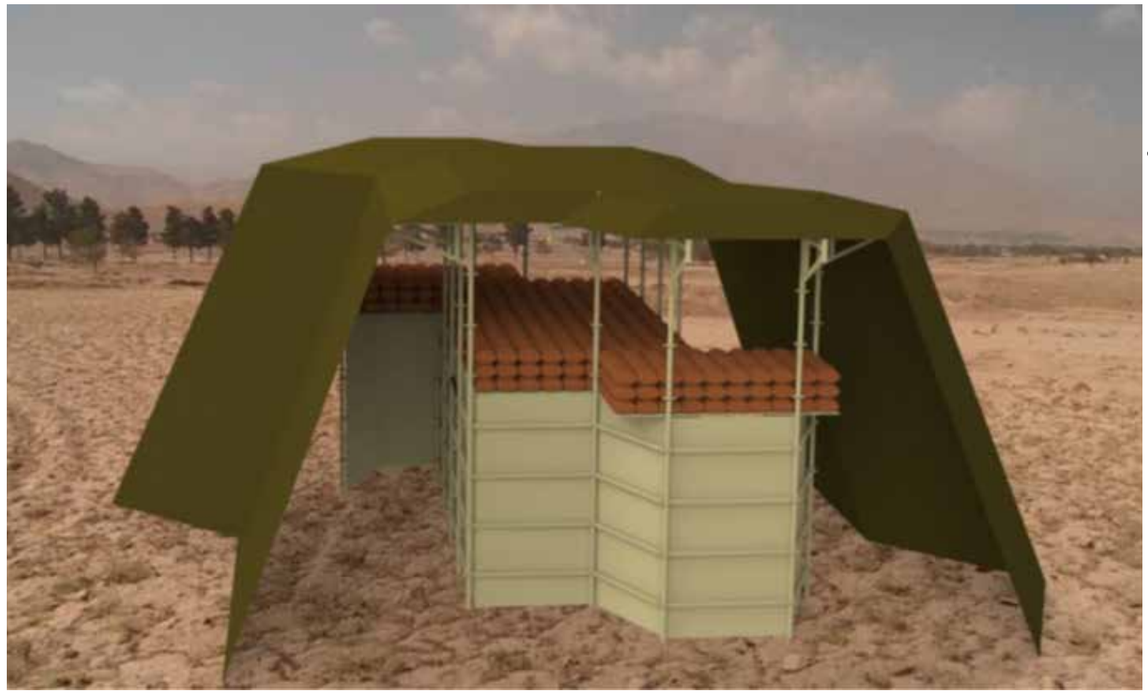


Photo illustration: Compotech, Inc.

Researchers at the Natick Soldier Research, Development and Engineering Center, or NSRDEC, are working to provide Soldiers ballistic protection from the ground up and maybe even below.

The Expeditionary Bunker System is intended to be used during the threat of an attack, providing effective protection against direct and indirect fire. The system will cost less than the concrete bunkers that are currently in use and offers increased mobility and easier set up. The bunker is designed to be deployed in under an hour by a team of four people.

"It will be available for day one of the deployment and will have a known, consistent level of protection," said Karen Horak, lead program engineer, Collective Protection Systems Team in the Expeditionary Maneuver Support Directorate at NSRDEC. "The system will go up and down quickly and can move with the unit. The materials are designed to be low cost."

The Expeditionary Bunker System features a modular set up in four sections, including a two-panel armor system. The bunker uses technology from the Improved Modular Ballistic Protection System, or MBPS-X, which consists of highly mobile, re-deployable, reusable, quickly erectable, lightweight panels that provide ballistic protection to Soldiers in a variety of shelters.

"The current design uses the MBPS-X panels," said Horak. "Different protection levels can be accommodated by panel layering."

The system is designed primarily to be used above ground.

"A field commander, however, may choose to place some of the system below ground," said Horak.

NSRDEC is working on the Expeditionary Bunker System with Compotech, Inc., a spin-off from the University of Maine's Advanced Structures and Composite Center. In its current incarnation, the bunker, depending on the threat, consists of a scaffolding frame, ballistic panels, a pre-detonation screen and sandbags.

The system is in very early development and an initial prototype was recently demonstrated at NSRDEC.

Researchers at the Natick Soldier Research, Development and Engineering Center, are developing the Expeditionary Bunker System, which is being designed to provide Soldiers with effective ballistic protection from direct and indirect fire.

"The intent was to get as many Soldiers to look at the system as possible," said Horak. "We wanted their feedback early in the design process so we can give them what they need."

Jason Kopp, an NSRDEC equipment specialist who also served in the infantry for 23 years, helped coordinate the demo and is playing a key role in getting Soldier input. He also provides logistical support for set up and take down.

"I feel the Warfighter will benefit from the rapid set up and the flexibility the system provides and the level of protection," said Kopp. "For example, if the mission requires little time in a certain location, the basic set up should provide adequate protection. Should the mission require more time, you can meet the need and improve the protection level. It's very versatile."

Lisa King-Schiappa, an NSRDEC mechanical engineer and Rocco Olean, an NSRDEC systems engineer, are both providing engineering support for the effort.

"Given the push toward expeditionary maneuver support, the bunker will provide rapidly deployable protection from indirect fire for the Warfighter," said King-Schiappa.

"We still have our work cut-out for us, but I believe that in the long run, the portability of the expeditionary mobile bunker will support the future operating concept of increasing the Army's mobility," said Olean.

Olean is proud to be a member of NSRDEC's Collective Protection Systems Team.

"What I like best about this position is the ability it provides me to continually learn and develop as well as contribute to a team whose mission is to provide new shelter and collective protection capabilities, which is something that is fundamentally necessary for the Army to stay in the fight," said Olean.

"I know if we can provide good quality, mobile protection systems, it can provide Soldiers peace of mind in the places where they live and work," said Horak. "From speaking with them, we know it is very difficult to focus on your mission when you don't feel protected. I hope the work we do will help them on this front."

"I feel being a retired Soldier in my line of work provides me a way to give back to a career that was very good to me," said Kopp. "I love knowing that what I do for work could potentially improve the quality of life for future Soldiers in our Army."

"It's extremely gratifying to know that our work will improve the safety of the Soldier," said King-Schiappa.

Photos: Jeff Sisto, NSRDEC Public Affairs

On the Move

Designing better-fitting garments for Soldiers

By Jane Benson, NSRDEC Public Affairs/NATICK, Mass. (July 19, 2017)

Alfredo Lujan knows that Soldiers are always on the move, so he's investigating new ways to make sure their clothing moves with them.

Lujan – a clothing designer on the Design Pattern and Prototype team at the Natick Soldier Research, Development and Engineering Center, or NSRDEC – is focusing specifically on repatterning the shirt for the Army Service Uniform, or ASU.

Lujan's redesign efforts were inspired by Swedish researcher and fashion designer Rickard Linqvist's thesis, "Kinetic Garment Construction," or KGC.

"I found out about KGC online while I was researching pattern making," said Lujan. "I became interested because it is something that is so different from conventional pattern making. The garments are cut in one piece and different portions of the garment are off grain. They actually move better with the body because the grain is slightly askew."

Traditional pattern making involves garments being cut into multiple components and assumes a static, upright body, while KGC involves cutting garments in one piece that wrap ergonomically around the body. Lujan explained that instead of approximating the measurements of the body, Lindqvist actually draped the fabrics on live models.

"He paid special attention to the different joints of the body," said Lujan. "That's how he placed his different seams. So he was creating something that would work with the body instead of just creating a garment that would cover up the body. He really looked at how the clothing was moving with the body. Is the wearer constrained by the placement of a certain seam?"

> **"Bootstrap encourages innovation and helps secure funding for ideas or equipment that may not be directly tied to a project but would be beneficial to the warfighter. By being able to try an innovation on a small scale, we are able to see if this idea works and makes an item better and if it can be applied to other work that we do."**
>
> **Alfredo Lujan, Design Pattern and Prototype team**

With encouragement and support from his Team Leader, Annette LaFleur, as well as fellow team members, Lujan wrote a proposal for NSRDEC's Bootstrap Initiative.

NSRDEC's Dr. Ken Desabrais, human protections administrator, conceived the Bootstrap Initiative, which was implemented to encourage innovation and creativity while streamlining processes and minimizing bureaucracy. Through the program, government civilian NSRDEC employees are allowed to submit proposals for a new technology, research project or business process.

Under the Bootstrap proposal, "We Are Not Squares!!", Lujan will create prototype variations of the ASU shirt, using the principals of KGC.

"Researching this type of possible innovation may not have been possible without Bootstrap," said Lujan. "Bootstrap encourages innovation and helps secure funding for ideas or equipment that may not be directly tied to a project but would be beneficial to the warfighter. By being able to try an innovation on a small scale, we are able to see if this idea works and makes an item better and if it can be applied to other work that we do."

User feedback is an important part of Lujan's proposal.

"Users will compare the different prototypes to see which has more range of movement," said Lujan. "User responses will be collected and incorporated into the research. It's all about the user."

Since the patterns for the prototypes will be based on human movement, the new design could potentially help optimize Soldier performance.

"KGC also creates more ergonomic garments with greater range of motion by realigning the fabric's grain within a garment," said Lujan. "This research could really benefit the Soldier."

In addition to the ergonomic benefits, Lujan explained that he believes KGC research is also important because it has been shown to reduce material waste by creating more efficient layouts and lessens manufacturing time by reducing the number of total seams.

Research is still in its early stages, but there are possibilities for collaboration with other teams at NSRDEC, something that Lujan discovered during NSRDEC's Bootstrap Pitch Day. During Pitch Day, proposers are given the chance to garner employee voter support for their ideas as well as the chance to find out opportunities for potential collaboration with other researchers at NSRDEC.

"During Pitch Day, I talked to an NSRDEC subject matter expert who was involved with wearable electronics about what their needs and issues are," said Lujan. "For instance, an electronics wire might have to cross over a seam, but with this type of design, there are far fewer seams. So there may be opportunities and options for fitting clothing with electronics that have less of an impact on Soldier performance."

Lujan is excited about the possibilities.

"Soldiers are in such high stakes situations," said Lujan. "Their clothing needs to move with them to enable them to perform better. It's very motivating to be working on something that will help warfighters do their jobs better by improving range of movement or by enabling electronics to transmit information better."

Photo: David Kamm, NSRDEC Strategic Communications

Norway Study

ARIEM looks at performance in winter

By Mallory Roussel, USARIEM Public Affairs/NATICK, Mass. (July 24, 2017)

About two hours north of Oslo, in the bitter cold of Elverum, Norway, U.S. Army Research Institute of Environmental Medicine, or USARIEM, scientists partnered with the Norwegian Defence Material Agency to conduct an eating behavior field study in an effort to improve nutritional intake and military ration design for Soldiers operating in cold weather.

Often, Soldiers can experience negative energy balance during cold-weather training when they cannot easily replace the calories they burn during rigorous physical activity. Pål Stenberg, commander of the Norwegian Defence Material Agency Catering branch and principal investigator of the Norway study, supported by Dr. Scott Montain, chief of USARIEM's Military Nutrition Division, or MND, and the Combat Feeding Directorate, or CFD, at the Natick Soldier Research, Development and Engineering Center, or NSRDEC, has been working to develop the next generation of Norway's cold-weather field rations in an effort to tackle this prevalent, yet complex, problem.

Stenberg and Montain explained that negative energy balance in warfighters can be caused by a number of different factors, from environmental conditions to lack of time, physical or mental stress that can reduce appetite, how the ration tastes or how functional it is in the environment in which a Soldier is working.

"The food a warfighter chooses to discard might affect his or her ability to perform and fight," Stenberg said. "In just a few days, we have seen results of reduced muscle loss, especially from those individuals with a lean body mass. However, we would like to see our troops alert and ready with optimal performance at any time. Sufficient nutrition will provide optimal performance, both physically as well as cognitively."

"Whether in Norway or in the U.S., undernutrition is something we almost always see in Soldiers during training," Montain said. "In arctic winter conditions, Soldiers can expend huge amounts of energy--up to 6,000 calories per day. This is more than double what a typical person in an office job would be burning in a day. Eating enough to meet this high energy demand, however, is difficult because Soldiers are eating as time permits and in difficult environmental conditions."

While the Army has spent decades making field rations nutritious and safe, Montain and Stenberg know that part of the challenge is encouraging Soldiers to consume the much-needed nutrients despite having less time or energy in a high-stress environment. The two researchers noted that the amount of food on your plate, or (in a Soldier's case) in an unwrapped ration, could greatly influence how much you are actually going to eat.

"This study is a research cooperation between USARIEM, University of Oslo, and Norwegian Surgeon General command, and the purpose is to find out if troops will increase their daily intake by providing them with larger entrées for breakfast, lunch and dinner," Stenberg said.

"Typically, approximately 90 percent of the main entrées that are issued in individual field rations are consumed, making it a great target for an intervention designed to increase Soldier daily energy intake," Montain said.

In March, MND researchers Anthony Karis and Susan McGraw, as well as Barbara Daley from CFD, traveled to Terningmoen, Norway, an Elverum training base for royal guardsman, to execute a four-day eating behavior study. They wanted to test if increasing the size or volume of the main entrée would increase the amount of energy Soldiers ate per meal, over the course of a day and over the four-day exercise. After measuring the height, weight and body fat of 57 Norwegian Soldiers, the researchers randomly divided the Soldiers into two groups.

A control group received rations that contained normal amounts of food. The experimental group received rations with overfilled entrées that contained one-third more food.

"We wanted to see if the added size of the main entrée led to increased energy intake or if Soldiers compensated and changed their eating behavior by either eating only a portion of the larger entrée or by eating less of the other components in the ration," Karis said. "To test our idea, we tracked the fate of each of the food items they received."

Since the Norwegian Army uses freeze-dried rations during cold weather, the two different-sized entrées looked very similar in size to each other when removed from the ration package. Soldiers had no clue how much food they had in their entrée until they had actually rehydrated the food. While the main entrées differed in size, the ration contents remained the same for both groups.

The researchers instructed the study volunteers to fill out eating cards to record which components in the cold-weather rations they had eaten, how much of the food component they had consumed, and if they did not eat an item--why they left it uneaten. They went through the study volunteers' disposed cold-weather rations to verify that the food listed as eaten on the card was accurate. They also used visual estimation to verify the amount of the component that was actually consumed. By doing this, the researchers could better understand how entrée size influenced eating behavior.

> **"Typically, approximately 90 percent of the main entrées that are issued in individual field rations during military field training are consumed, making it a great target for an intervention designed to increase Soldier daily energy intake."**
>
> **Dr. Scott Montain, USARIEM Military Nutrition Division chief**

While the MND and CFD researchers collected data, it was business as usual for the Soldiers at Terningmoen. The Soldiers performed field marches, dug foxholes, and learned to set up guard and use a bayonet in 20- to 40-degree Fahrenheit weather.

On the final day of the field study, the researchers took the Soldiers' final body composition measurements before flying home.

Now back in the U.S., the researchers are diligently processing the data to determine if the larger entrée led to greater daily energy intake. They are continuing to collaborate with their Norwegian research partners in interpreting the data.

The relationship between cold weather and Soldiers' nutrition and eating behavior is complex. The researchers realize there is much more to understand to create a military ration that is nutritious, tasty and easy to prepare in such an extreme environment. Karis said that these field studies in Norway are extremely important for the U.S. Army researchers because they allow them to see firsthand how the cold affects Soldiers' use of operational rations and the challenges it creates for sustaining health and performance. The information the two countries are gathering by working together is intended to provide their Soldiers with practical solutions when operating in extremely cold temperatures so they are healthy enough to continue performing their missions and training.

"Norway is basically the lead in cold weather survival because they operate in a cold, damp environment for most of the year, while the U.S. only faces winter for a few months out of the year," Karis said. "Yet, every military seems to have an issue with negative energy balance when out in the field in the cold. This is not just a unique issue for the United States. Canada, Norway and other countries that work in the cold have similar issues. This study was a perfect opportunity for USARIEM, NSRDEC and Norway to work together and learn what we can do to tackle persisting challenges in field feeding."

Photo: Susan McGraw, USARIEM

Norwegian Soldiers march through a snow-laden path in Terningmoen, a training base for the Norwegian royal guard in Elverum, Norway.

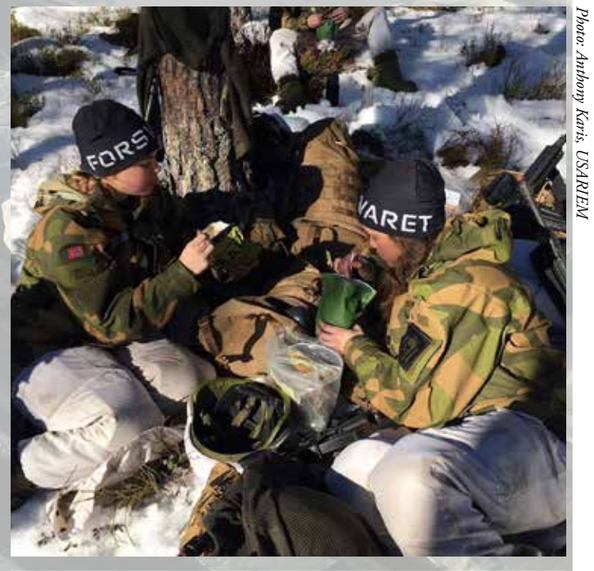
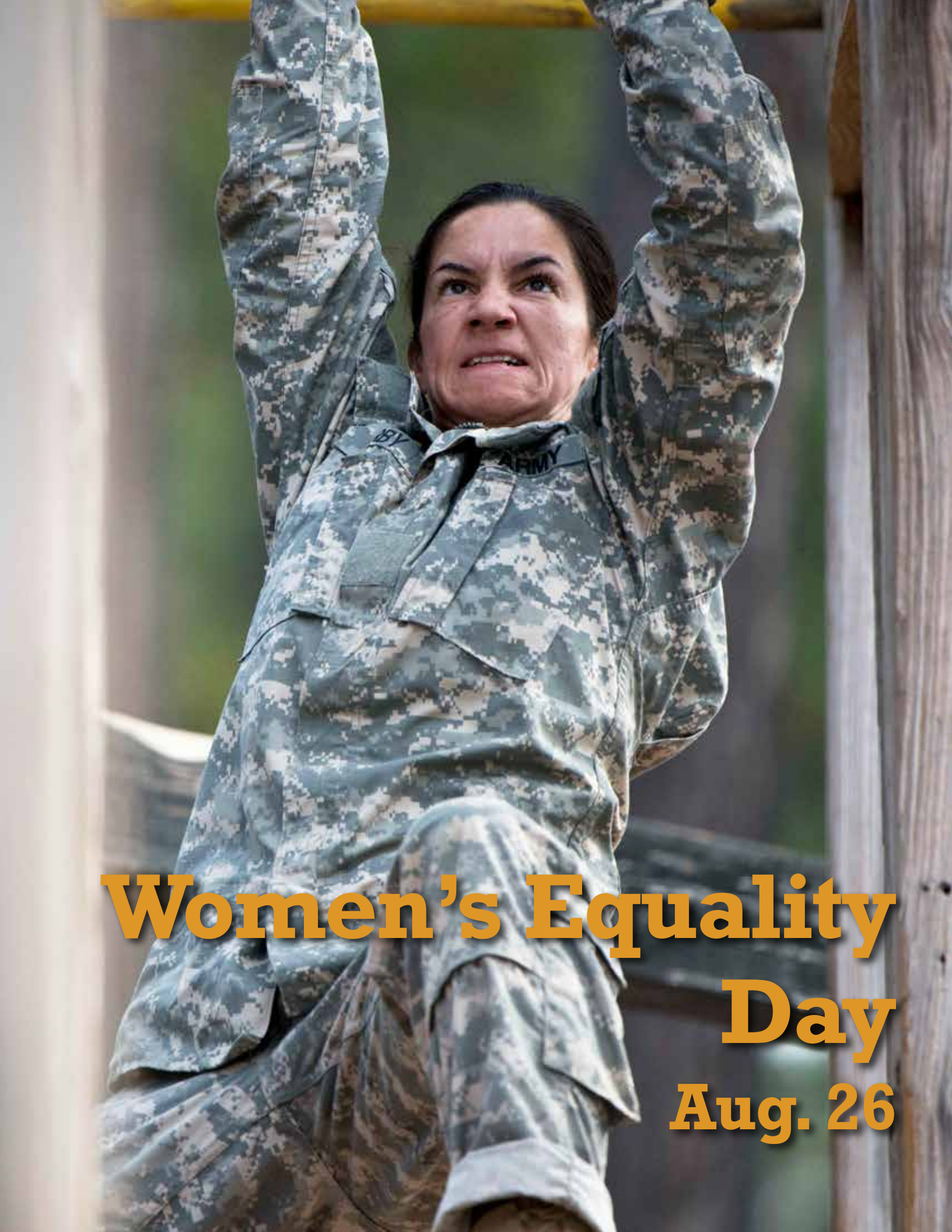


Photo: Anthony Karis, USARIEM

Two Norwegian Soldiers dig into cold weather rations after a long, snowy field march at Terningmoen, a training base in Elverum, Norway.

Background Photo: NASA/JPL-Caltech



Women's Equality Day

Aug. 26